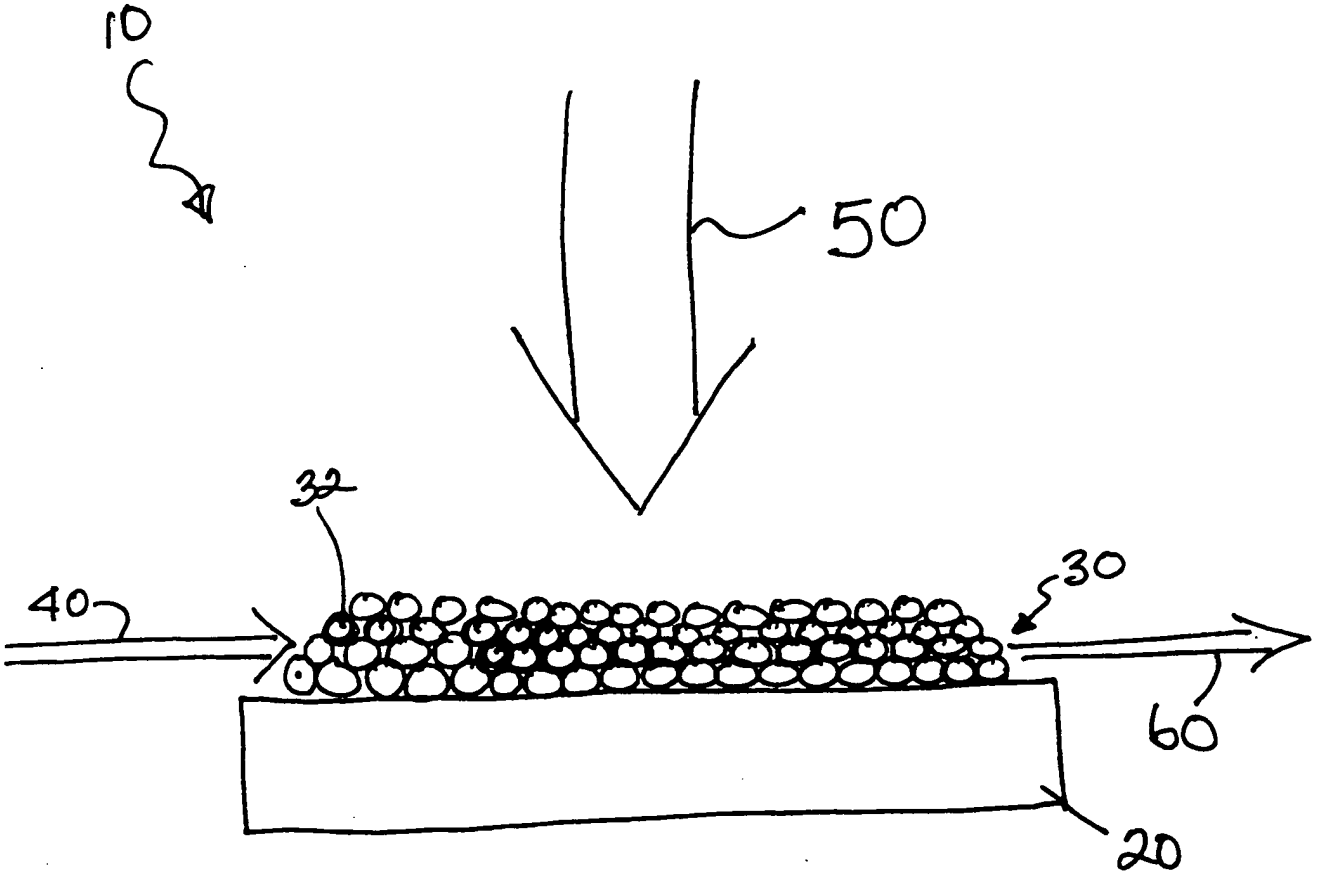


FIG 1

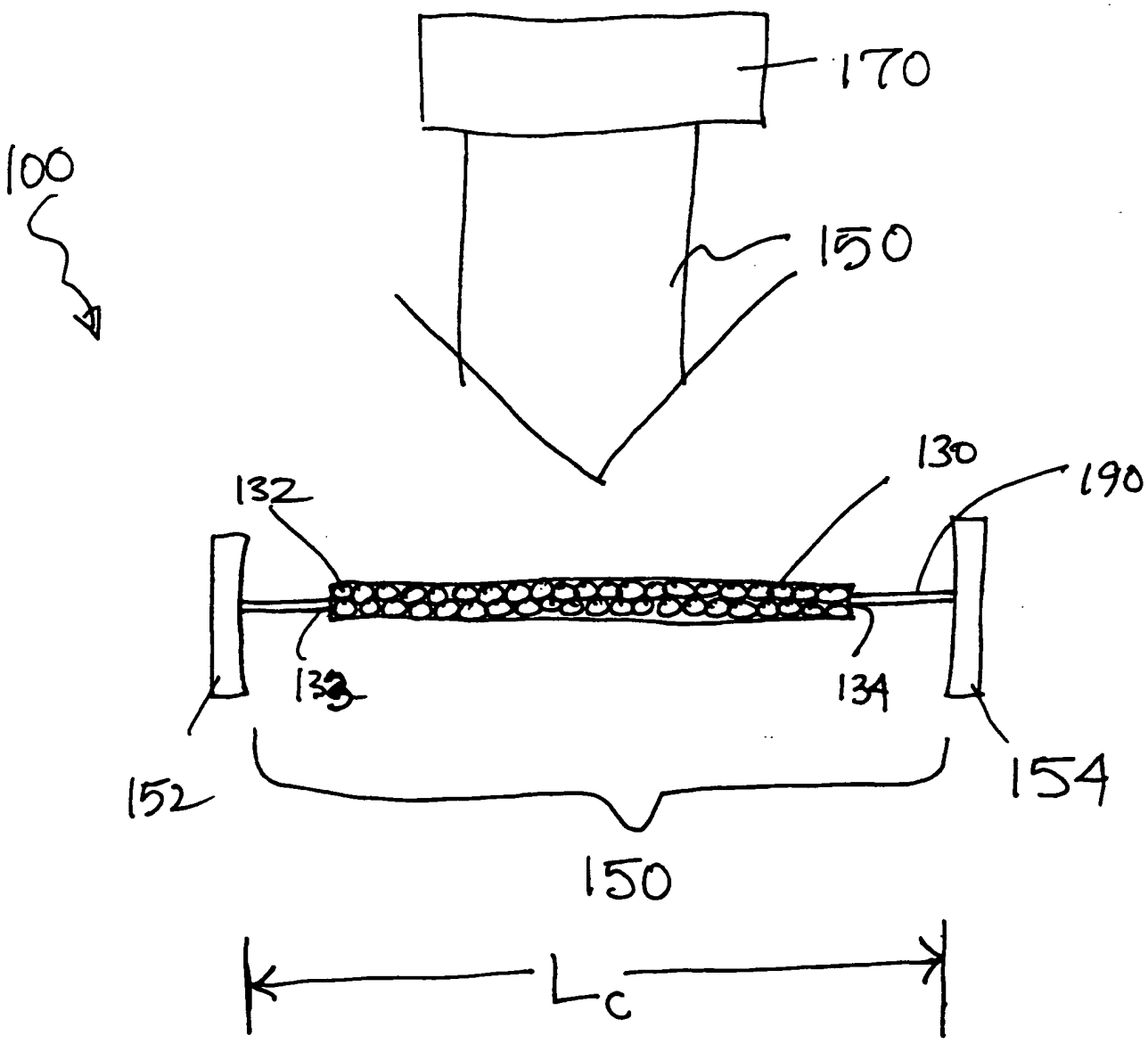


FIG 2

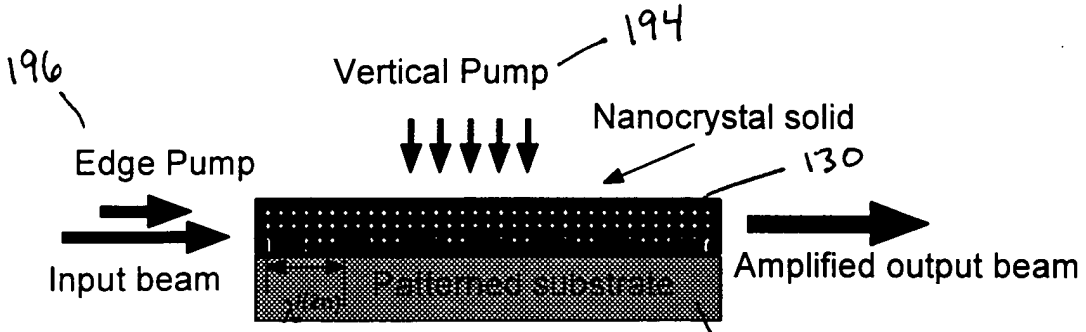

196
Edge Pump
Input beam
Vertical Pump
194
Nanocrystal solid
130
Patterned substrate
Amplified output beam
192

Fig. 3A

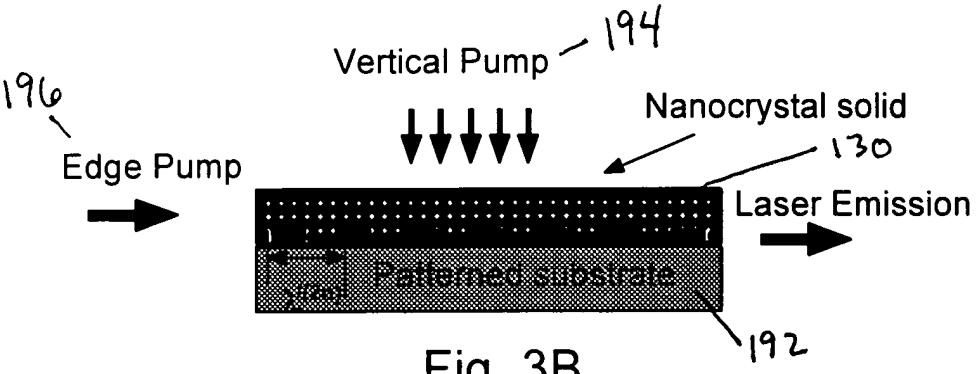

196
Edge Pump
Vertical Pump
194
Nanocrystal solid
130
Patterned substrate
Laser Emission
192

Fig. 3B

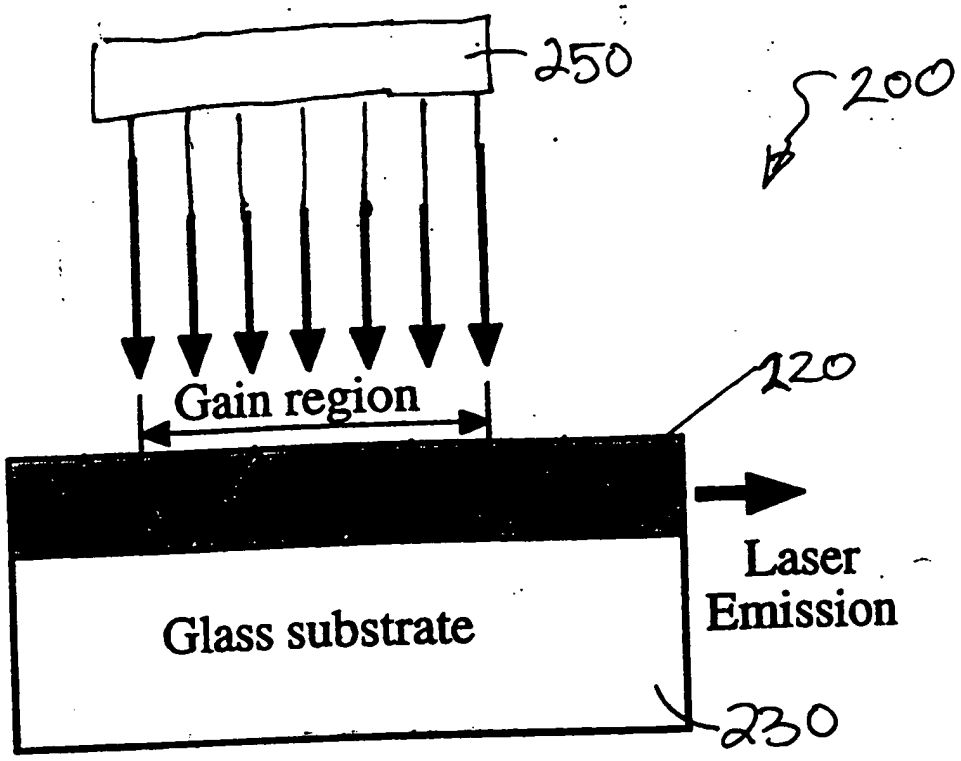


FIG. 4

Docket No. 3150-0134

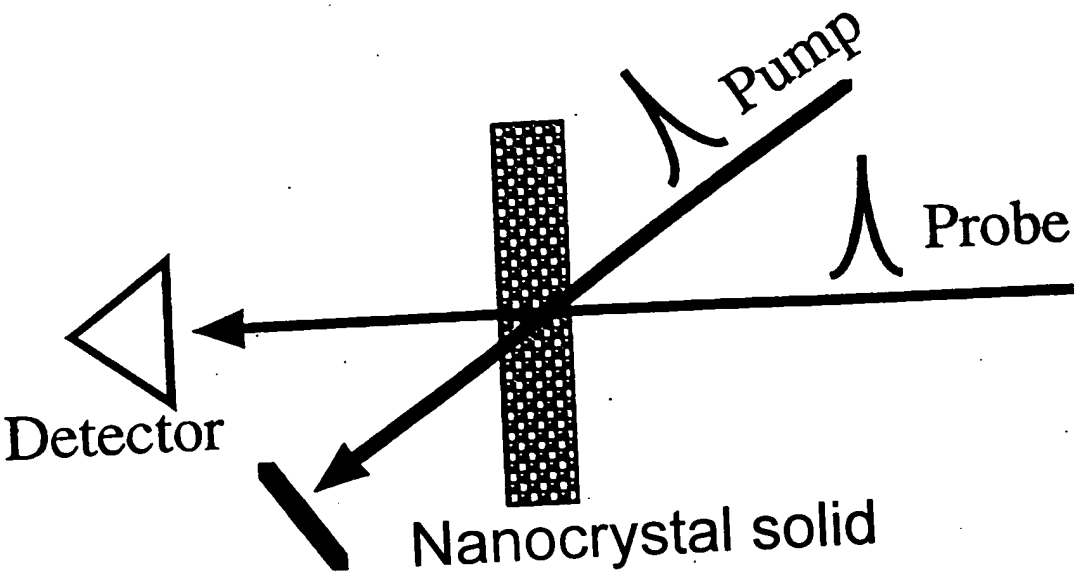


FIG. 5

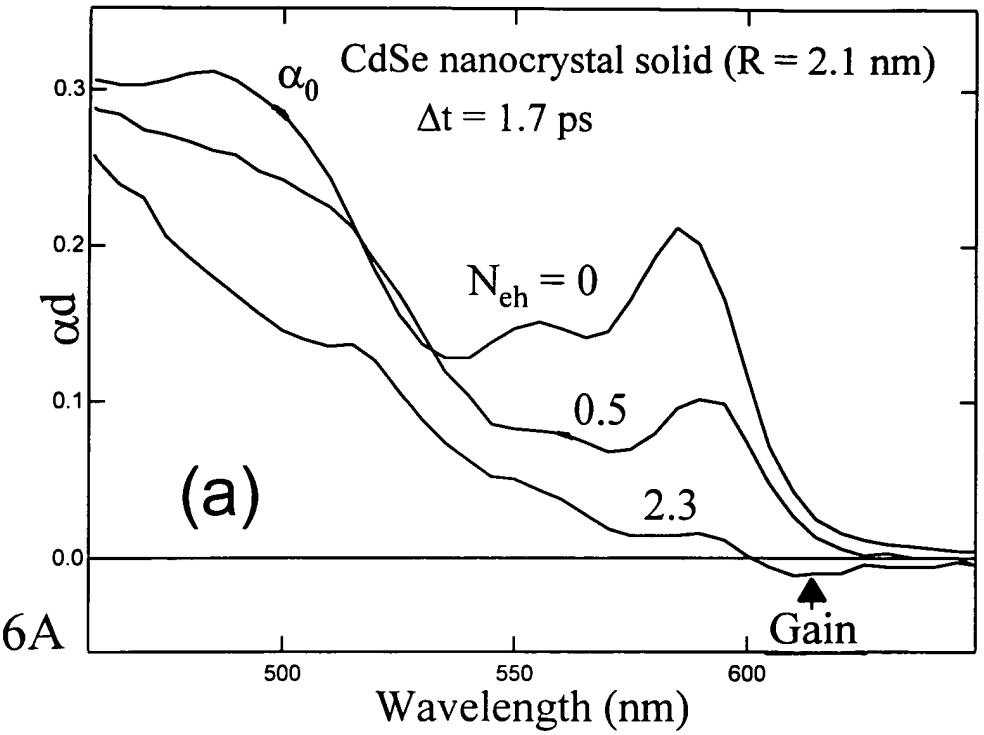

CdSe nanocrystal solid (R = 2.1 nm)
Δt = 1.7 ps
α_0
$N_{eh} = 0$
0.5
2.3
(a)
Gain
αd
Wavelength (nm)
0.0
0.1
0.2
0.3
500
550
600

FIG.6A

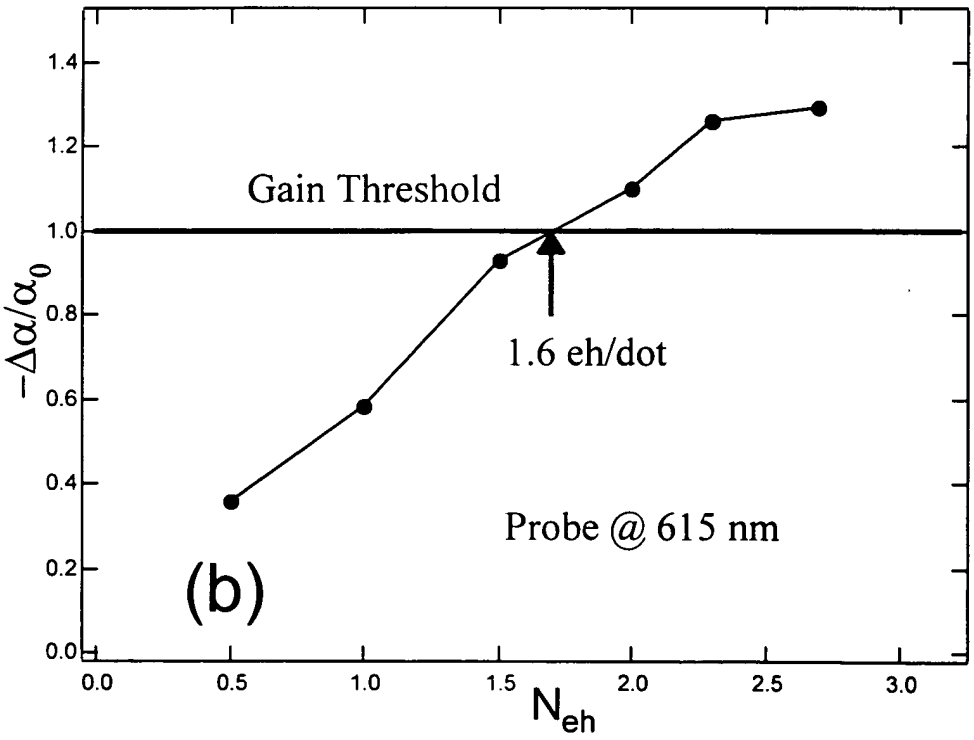

Gain Threshold
1.6 eh/dot
Probe @ 615 nm
(b)
$-\Delta\alpha/\alpha_0$
N_{eh}
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
0.0
0.5
1.0
1.5
2.0
2.5
3.0

FIG.6B

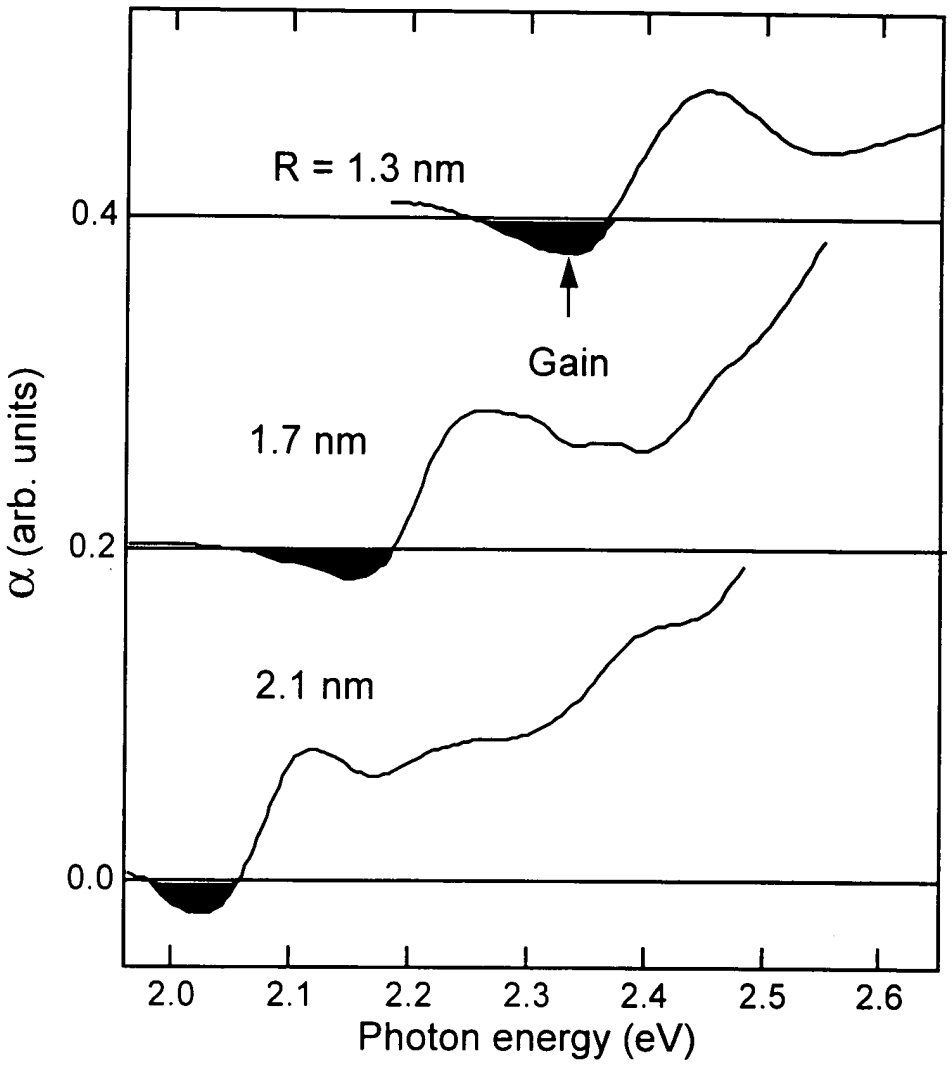

R = 1.3 nm
Gain
1.7 nm
2.1 nm
α (arb. units)
0.4
0.2
0.0
2.0
2.1
2.2
2.3
2.4
2.5
2.6
Photon energy (eV)

FIG. 7

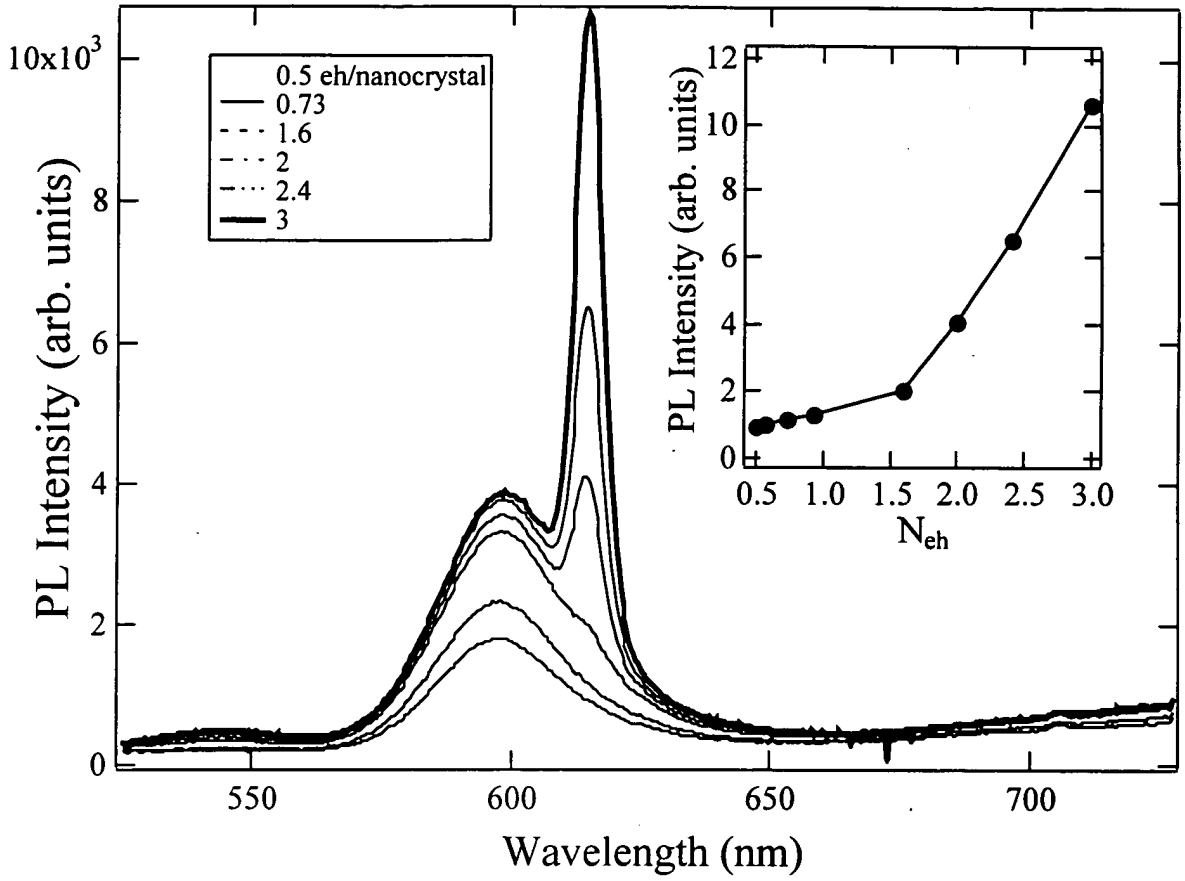
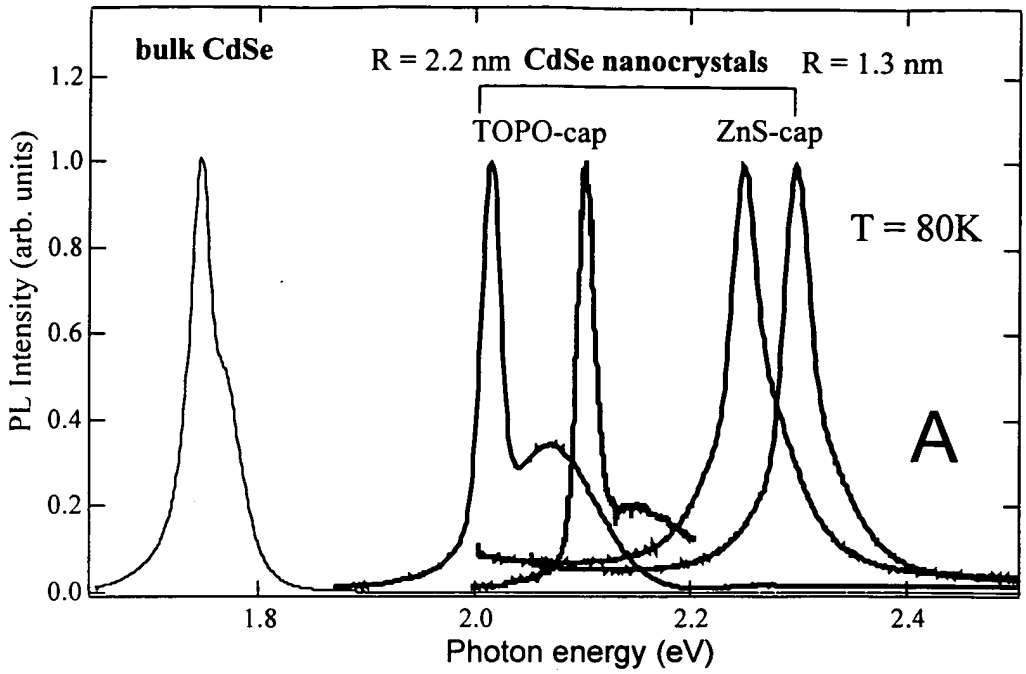

10x10^3
8
6
4
2
0
PL Intensity (arb. units)
0.5 eh/nanocrystal
0.73
1.6
2
2.4
3
550
600
650
700
Wavelength (nm)
12
10
8
6
4
2
0
PL Intensity (arb. units)
0.5
1.0
1.5
2.0
2.5
3.0
N_eh

FIG. 8


bulk CdSe
R = 2.2 nm CdSe nanocrystals
R = 1.3 nm
TOPO-cap
ZnS-cap
T = 80K
A
PL Intensity (arb. units)
Photon energy (eV)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
1.8
2.0
2.2
2.4

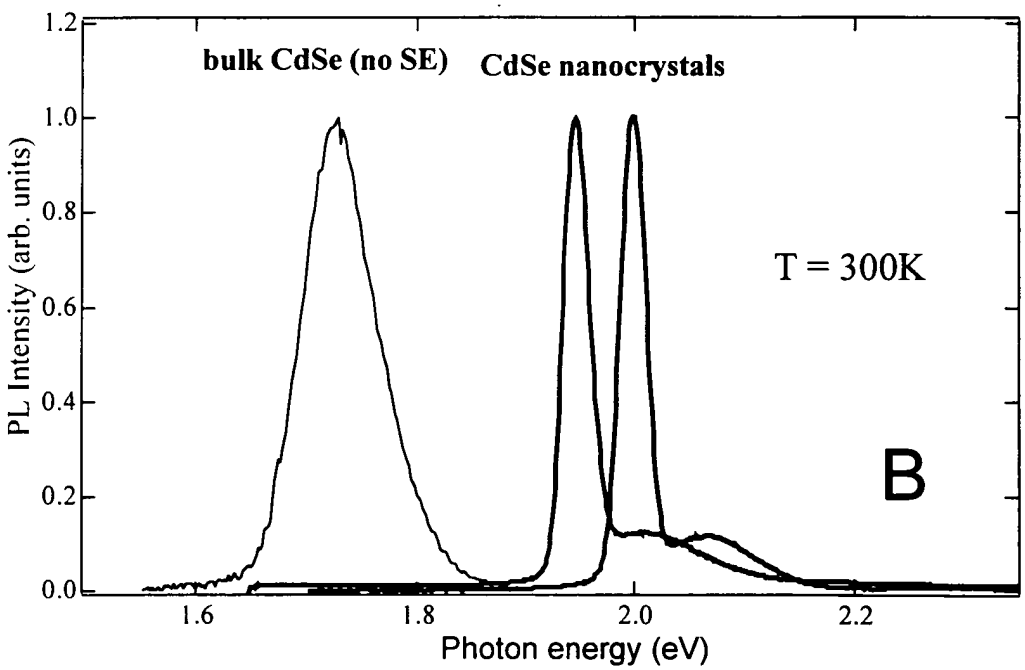

bulk CdSe (no SE)
CdSe nanocrystals
T = 300K
B
PL Intensity (arb. units)
Photon energy (eV)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
1.6
1.8
2.0
2.2

FIG. 9